

USING THE WINCHESTER

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PREFACE

Winchester technology forms an integral part of the Sample-to-Disk (tm) System. The storage capacity of the disks and fast data transfer rates permit recording and recreating of minutes of sound waveforms.

The same storage capacity and data transfer rates can also add to the convenience and operating speed of the Synclavier (R) II Real-Time and Terminal Support Systems.

You can think of even the smallest Winchester disk as the equivalent of a series of floppy diskettes, all on line at the same time. Simply by typing different commands on the computer terminal, you can select different Synclavier (R) II operating systems or store and recall several different sets of timbres or sequences without stopping to change diskettes.

You already know how to load the Synclavier (R) II Real-Time operating system from a floppy diskette. This manual describes how to load the SCRIPT operating system from the Winchester disk and how to manage Winchester disk storage space. You should read this manual before you turn to the SCRIPT, MAX, or Music Printing documentation.

Experienced users will find additional relevant details on the Winchester disk in the Scientific XPL/4 Documentation Update.

Before beginning, note that even if a Winchester disk has been installed in or connected to your system, you may still operate entirely from floppy diskette. You can use one floppy diskette drive to load the Synclavier (R) II real-time performance system, just as is described in the Synclavier (R) II User Guide. If you have two floppy diskette drives, you can use one as the system drive and the other as the user drive, as is described in the SCRIPT User Guide. In either case, you will bypass the Winchester disk.

IMPORTANT NOTE: Your new Winchester disk already has valuable information stored on it that you can accidentally erase if you have not read the instructions in this manual.
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WINCHESTER HARDWARE

There are several different sizes of Winchester disks. The 5 1/4-inch Winchester offers 5 megabytes of storage capacity. The two 8-inch Winchesters offer 10 and 20 megabytes of storage capacity respectively. Up to four Winchesters of the same or different sizes can be added to the same system.

Each 5 1/4-inch Winchester is shipped and used in its own protective case; it is externally connected to the Digital Synthesizer. Although each 8-inch Winchester is also shipped in its own protective case, it is installed in the white cabinet and internally connected to the Digital Synthesizer before use. Instructions for connecting and/or installing Winchesters may be found in the Options Setup section of the Synclavier (R) II Setup Manual.

You must have at least one floppy disk drive to use along with the Winchester. A second floppy drive is handy for backup purposes in case of Winchester breakdown. Floppy drives are slightly more portable than Winchester disks.

WINCHESTER SOFTWARE

When you receive your Winchester disk from New England Digital, a permanent copy of the latest release of the SCRIPT-XPL/4 software will already be stored on it, along with several sample SCRIPT compositions, MAX programs, various utility programs, the Sample-to-Disk software (if purchased) and the Music Printing software (if purchased).

You will also receive two diskettes for use with your Winchester system.

The Winchester Installation Diskette is used to format the Winchester disk and to copy the SCRIPT-XPL/4 operating system onto it. We use this diskette here at New England Digital to prepare your Winchester with the latest software. You will use it to copy future software updates onto your Winchester as well as to replace accidentally erased software. With this diskette it is possible to completely erase whatever is stored on the Winchester. Do not use this diskette unless you have read the section on its use at the end of this manual.

The Winchester Bootload diskette is used to load the SCRIPT operating system from the Winchester drive into the computer. Its use is described in the next section.

LOADING

Locate the Winchester Bootload diskette and follow this procedure:

1. Turn on the terminal.
2. Turn on the disk drives and computer.
3. Insert the Winchester Bootload diskette into the left-hand drive.

This diskette contains a special program which instructs the computer to read the operating system from the Winchester drive rather than from the floppy diskette.

4. Press the LOAD button. The screen will say

Waiting for the Winchester...

while the Winchester gets up to speed (about 30 seconds). Then the following sign-on message will appear on the screen:

SCRIPT Level II (Release G)

READY

At this point, the SCRIPT-XPL/4 monitor has been read from the Winchester and placed in computer memory. The monitor interprets the "commands" that you type on the terminal and coordinates the operation of all the programs stored on the Winchester, such as the Synclavier (R) II real-time system, the SCRIPT programs, the Music Printing Option, and the MAX programs.

The word READY appears whenever the monitor is ready for your commands. You use the same monitor commands when you operate from a Winchester drive as when you operate from floppy diskettes. These commands are amply documented in the SCRIPT User Guide.

Before proceeding further with SCRIPT, however, you should know how files are stored on the Winchester disk. The next section will show you how to list and use the files on your disk.

If you want to use the real-time system instead of SCRIPT at this time, you may simply type PLAY on the terminal. This

will transfer control of the system from the computer terminal to the Synclavier (R) II keyboard unit, which will be operated exactly as if you had loaded directly from a Synclavier (R) II System diskette. To return to the terminal, press the S key on the terminal.

USING THE FILES ON THE WINCHESTER

Type the monitor command CATALOG and press RETURN. (Always press RETURN after each monitor command.)

You will see a list of names on the terminal screen. If you have just loaded the operating system, the list will be a directory for the entire storage space, or top-level catalog, on the Winchester.

Some of the names in the list are file names, such as MEMBURN, PRINTTEST, and FORMCOPY. A file name is the group of up to eight letters or numbers that is used to identify a file, which can be a SCRIPT composition or a MAX or XPL program.

There may also appear in the list names which are subcatalog names. A subcatalog is simply a group of files stored together for convenience under one subcatalog name. On floppy diskettes there is usually just one catalog for all the files on the diskette. On the Winchester disk, there is one top-level catalog and there may be several subcatalogs.

Still other names may refer to sound files for the Sample-to-Disk system. The exact list will depend on the options you have selected for your system.

The names of two groups of files stored on the Winchester disk are not listed by this CATALOG command. The first group are the special files used to operate the system and to store and recall Synclavier (R) II timbres and sequences. The names of these "hidden files" begin with a period (".") and can be listed by the CATALOG ALL command. The CATALOG ALL command also lists the file type for each name, i.e., subcatalog, sound file, text file, etc.

The second group of unlisted files are those that are stored within subcatalogs. To list these files you must first enter the subcatalog in which they are stored. When you press LOAD, you automatically enter the top-level catalog. You use the monitor command ENTER to enter a subcatalog. The catalog or subcatalog that you have most recently entered is called the current catalog.

In the SCRIPT User Guide you learn how to recall sample SCRIPT compositions from the user diskette in the right-hand drive by typing OLD followed by the name of the file that contains the composition. (Full instructions appear on page 5 of the SCRIPT User Guide.)

The same sample compositions have been installed here in the factory on your Winchester. In some systems, these files may be found in the top-level catalog. If you see the file names

TIMBRES	BACH13	BRAND3	POLLY
KEY	RHYTHM	PHRASE	ERRORS
DYNAMICS	TEMPO	SYNC1	SYNC2

listed in your top-level catalog, you may recall any of them exactly as described in the SCRIPT User Guide right after pressing the LOAD button or any time you are in the top-level catalog.

If the name SCRPTCAT appears in your top-level catalog, it means that the sample files have been stored together in a subcatalog. You will use the same command to recall a file, but you must first enter the SCRPTCAT subcatalog as follows:

1. Type

ENTER SCRPTCAT

This command makes the subcatalog SCRPTCAT the current catalog. The files stored within it may now be listed on the screen.

2. Type

CATALOG

Now you will see the list of SCRIPT file names. You could now recall one of these files by typing the monitor command OLD followed by the file name.

3. To return to the top-level catalog, type

ENTER :

(the colon (":") refers to the main, or top level, catalog).

4. Type

CATALOG

to verify that you are back at the top level. The list of names should be the same as what you saw right after loading the system.

When you are ready to learn about MAX, you must have access to the MAX library of routines as well as the MAX demo programs. If the top-level list includes the names MAXSYN, MAXIO, MAXTASK, as well as DEMO1-DEMO15, you must be in the top-level catalog to use MAX. If MAXCAT appears in the top-level list, you must enter the MAXCAT ~~sub~~subcatalog before you can access those files.

1. Type

ENTER MAXCAT

to enter the MAXCAT subcatalog.

2. Now type

CATALOG

You will see listed the names of the fifteen MAX demo files as well as the MAX library source files.

It is also possible to search in the top-level catalog even though you are in a subcatalog. For instance, you could now ...

3. type

ENTER :SCRPTCAT

This command uses the colon (":") to direct the monitor to search in the top-level catalog for the subcatalog SCRPTCAT. If the monitor finds SCRPTCAT, it will then make SCRPTCAT the current catalog. Without the colon, this command would direct the monitor to search in the MAXCAT subcatalog, which is the current catalog, for the name SCRPTCAT.

Finally

4. type

ENTER :

to return to the top level catalog.

Now that you know how to get in and out of subcatalogs, you should turn to the SCRIPT documentation and learn the details of the SCRIPT system and language. Operation is the same whether you are using floppy diskettes or Winchester disk for storage of files.

Every time you recall a file by typing the command OLD followed by a file name, the monitor will look for the file in the current catalog on the Winchester. And when you type SAVE to store a file, the monitor will store it in the current catalog.

You will find that compilation time (the time it takes for the computer to convert your SCRIPT composition into a Synclavier (R) II sequence) is far shorter when you use the Winchester than when you use floppy diskettes.

To turn off your system, first remove the Winchester Bootload diskette from the disk drive and replace it in its jacket. Then turn off the computer and the terminal.

* * * * *

The rest of this manual describes more advanced features of the Winchester system.

ACCESSING DIFFERENT TIMBRES AND SEQUENCES

During Synclavier (R) II real-time operation, the system will automatically use the timbres and sequences that are stored in the current catalog on the Winchester when you press the TIMBRE STORE/RECALL and RECORDER STORE/RECALL buttons. If you are in the top-level catalog or the SCRPCAT subcatalog, these will be the instruction timbres and sequences that are also stored on the Synclavier (R) II System Diskettes.

There are two ways of accessing different timbres and sequences while using a Winchester. In the first method, you use the DRIVE SELECT button on the Synclavier (R) II keyboard unit. Simply remove the Winchester Bootload diskette from the left-hand drive and insert the desired timbre diskette. Press the DRIVE SELECT button and hold it down while you press a TIMBRE BANK button or a RECORDER STORE/RECALL button.

In the second method, you create new subcatalogs, store a different set of timbres in each one, and enter the desired subcatalog before typing PLAY. This method is described in the next section.

CREATING AND USING YOUR OWN SUBCATALOGS

The top-level catalog has room for 128 files. You could store user files in it for quite a while before you ran out of space. For easier handling, however, you will want to group your own files together in small subcatalogs. Each subcatalog can have as many as 32 files, including one set of timbre banks and up to six sequences. If you set up several subcatalogs, you will be able to store several sets of timbre banks and sequences on the Winchester.

The instructions below show you how to create a subcatalog, enter it, copy timbre and sequence files from a diskette into it, and then use the timbres and sequences.

Creating a Subcatalog

1. If you haven't just loaded the system, type

ENTER :

2. Type

CCA MYCAT

The monitor command CCA means "create catalog". MYCAT will be the name of your new subcatalog. A subcatalog name can consist of up to eight characters.

3. Type

SAVE,170

The command SAVE followed by a comma and then a number reserves the specified number of sectors on the disk for the new subcatalog along with an additional sector for the subcatalog directory. There are 256 sixteen-bit words in each sector.

Note: The comma in this command is significant and must not be forgotten.

This particular command reserves 170 sectors of storage space on the Winchester disk for MYCAT files plus one for the directory. We have suggested the number 170 because that number of sectors will fit comfortably fit onto a single density minidiskette and could be copied in toto onto diskette for backup purposes. If your diskettes are double-density minidiskettes, you could reserve up to 400

sectors, and if your diskettes are maxidiskettes, you could reserve up to 615 sectors. (Copying subcatalogs onto diskette is done with the utility program FORMCOPY. See the Scientific XPL/4 Documentation Update.)

4. Now type

ENTER :MYCAT

MYCAT is now the current catalog. Remember, the SCRIPT monitor looks in the current catalog for files and the real-time performance system looks in the current catalog for timbres and sequences.

5. Type

CATALOG ALL

The monitor will look at the MYCAT directory and will print on the screen:

No files are SAVED.

because MYCAT is a new and empty catalog.

Copying Timbre Banks into a Subcatalog

1. Now insert a timbre diskette in the left-hand drive.

2. Type

OLD .BNKDATA/FO

The file name .BNKDATA is the file name of the set of eight banks of timbres on every timbre diskette. The /FO symbol inserted after .BNKDATA tells the monitor to look for and copy the file which is on the diskette in the left-hand drive.

You could also copy a timbre file from the diskette in the right-hand drive as well as from diskettes in auxiliary remote drives by inserting other symbols, or device identifiers, after .BNKDATA. The device identifiers are:

/FO diskette in left-hand drive
/F1 diskette in right-hand drive
/R0 diskette in remote drive 0
/R1 diskette in remote drive 1

3. Type

SAVE

The monitor command SAVE copies the current file, .BNKDATA, into the current catalog of the Winchester.

4. Type

CATALOG ALL

MYCAT now contains the following:

.BNKDATA 12288 Wds. Data File

Copying a Sequence File into a Subcatalog

1. Now type

OLD .SQ0DATA/FO

There are different sequence files associated with each of the buttons under RECORDER STORE/RECALL. The file name .SQ0DATA is the name of the the sequence file that is accessed by button 1. You could copy any of the sequence files from any diskette using one of the following file names.

File Name	Accessed by
.SQ0DATA	button 1
.SQ1DATA	button 2
.SQ2DATA	button 3
.SQ3DATA	button 4
.SQ4DATA	button 5
.SQ5DATA	button 6

Remember, there are different numbers of sequence files on different timbre diskettes and the lengths of the sequence files vary from 1000 to 10,000 notes.

2. Type

SAVE

This stores the sequence file in the current catalog. You could repeat the OLD filename/FO and SAVE commands and copy all six sequence files if they all exist on the

timbre diskette in the left-hand drive.

3. Type

CATALOG ALL

You will see listed

.BNKDATA	12288	Wds. Data File
.SQODATA	23552	Wds. Synclavier File

The number of words listed for .SQODATA will be different if you have stored a sequence with room for fewer notes. This sequence file has room for a 10,000 note sequence. NOTE: Your list may say "Text File" instead of Synclavier file.

Using the New Timbre Banks and Sequence File

1. Type

PLAY

to transfer control to the real-time keyboard system. Timbre Bank 1 from the timbres you just copied into your subcatalog will now be placed in computer memory and Timbre Entry 1 from that bank will be active on the keyboard. When you press the buttons under TIMBRE BANK and ENTRY, other timbres in MYCAT will be accessed.

Similarly, when you press button 1 under RECORDER STORE/RECALL you will recall the sequence you just transferred onto the Winchester. If you press button 2, you should see Error Message 4 in the digital display window, indicating that there is no sequence 2 in the current catalog.

2. Type

S

to return to the monitor.

3. Type

ENTER :

to return to the top-level catalog.

4. Type

CATALOG ALL

The following entry should be added to the list:

MYCAT 43776 Wds. Subcatalog

You can create a series of subcatalogs each with a different set of timbres and sequences. By entering the correct subcatalog before you type PLAY, you can quickly access the desired timbres and sequences.

You cannot change subcatalogs from within the real-time system. This must be done with the monitor command ENTER. To access other timbre banks and sequences during real-time performance, you can use timbre diskettes and the DRIVE SELECT button as described previously.

You can also store SCRIPT compositions as text files. And, once you have stored sequence files in the subcatalog, you can store and recall converted SCRIPT sequences with the STORE and RECALL commands.

There are other ways of using subcatalogs which allow you to transfer files from subcatalog to subcatalog and to examine a subcatalog directory without actually entering it. For more information on subcatalogs, see the Scientific XPL/4 Documentation Update. MAX programmers should read "New XPL/4 Programming Functions" in that document for information on inserting files from different subcatalog during the compilation of a program.

USING THE WINCHESTER INSTALLATION DISKETTE

The Installation diskette contains a short program that is used to format the Winchester disk and to install system files onto it. We have used the Installation diskette here at the factory to perform these tasks and prepare the Winchester disk for operation. You have received a copy of the Installation diskette so that you can install future software updates onto your Winchester disk or replace accidental erasures.

(Occasionally you will update your Winchester by transferring individual files from a diskette onto the Winchester. In this case, you use OLD filename/F0 followed by SAVE, to copy a new file from a diskette in the left-hand drive onto the Winchester, or by REPLACE, to replace an old file with an updated version.)

When you run the Installation program, you will be asked whether or not you wish to format. Formatting erases all information stored on the Winchester. You can omit the formatting step and simply replace old system files with new ones. In this case, you will not lose your user files. However, compilation may be somewhat slower than before, due to changes in the location of some of the files. For most efficient compilation, you should format the Winchester disk and reinstall all system files in the correct order. In this latter case, you would save all user files on floppy diskette before using the Installation program.

Of course, if the system has been accidentally erased for some reason, you would format and reinstall all system files again because you have lost access to the user files anyway.

COMPLETE FORMATTING AND INSTALLATION

1. Save your user files on floppy diskette. Use the OLD <filename> and SAVE/F0 or F1 procedure to save individual files or use the FORMCOPY utility program to copy complete subcatalogs. The WINDUMP utility program may be used to dump out a Sound File which is longer than will fit on one floppy.
2. Insert the Winchester Installation diskette into the left-hand diskette drive and press the LOAD button.
3. You will be asked if you would like to format. Type Y for yes.

The formatting procedure takes a while. When it is finished, you will be presented with a menu of files to install, and a number for each selection.

4. Select the option to install both SCRIPT and XPL/4 by typing its number, followed by RETURN.
5. Insert the latest SCRIPT system diskette and press RETURN.
6. After that diskette has been copied, insert the latest XPL/4 system diskette and press RETURN.

When copying is finished, you will be returned to the menu.

7. Continue down the list installing all desired software modules: Utility Programs, Signal File Manager, Synclavier (R) II timbres, Synclavier (R) II sequences, and MAX.

Note that the timbre banks and sequences from any Synclavier (R) II or SCRIPT diskette can be used as sources. They will be copied into the top-level catalog on the Winchester.

8. When finished, insert the Winchester Bootload diskette in the drive and press LOAD.
9. Type OLD CONFIGUR and check that the operating system is configured properly for your system, that is, setup for the memory size, terminal, and printer (if any) in your system. (See instructions in Scientific XPL/4 Documentation Update.)

You are now ready for operation.

UPDATING SELECTED SYSTEM FILES

1. Insert the Winchester Installation diskette in the left-hand drive and press LOAD.
2. Type N for no formatting.
3. Select the correct system on the menu.
4. Insert the new system diskette and press RETURN.
5. Repeat as desired.

6. Use the Winchester Bootload diskette to begin operation with updated features.

SPECIAL BACKUPS

To keep you up and running even in the event of a disk wipeout, we have included special backup programs on the Winchester Bootload and Winchester Installation diskettes. You will use these programs, as well as the following instructions, only when and if your Winchester floppy diskettes are erased or damaged.

It will be helpful if you first understand something about the loading process. Whenever you press the LOAD button, the computer looks at the diskette in the /F0, or left-hand, disk drive for a program with the name MONITOR. If the computer finds such a program, it will execute this program automatically. If it doesn't find such a program, your terminal will probably start beeping.

There are two Winchester programs: the Bootload program and the Installation program. Copies of both programs are contained on both the Bootload and Installation diskettes. On the Bootload diskette, the Bootload program is given the name MONITOR and the Installation program is given the name WINS. On the Installation diskette, the Installation program is given the name MONITOR and the Bootload is given the name WBOOT. WINS and WBOOT are backup programs. To execute a MONITOR program, you just press the LOAD button. To use a backup program, you must first recall it with the OLD command and then execute it with the RUN command. In addition, you can rename a backup program MONITOR and save it on another diskette, thus creating a diskette that may be executed automatically when you press the LOAD button.

For example, suppose your Winchester Bootload diskette has been erased or damaged and you have no means of loading the operating system from the Winchester. To create another Bootload diskette, follow this procedure:

NOTE WELL: You will need two floppy drives for this to work. If you have only one double (track) density drive or if you have one double density and one single density drive, call New England Digital for help.

If you don't follow these instructions carefully, you could wipe out the MONITOR program on the system diskette or on the Winchester.

1. Have handy a blank formatted blank diskette or a timbre diskette #1, #3, or #4. To format a diskette, use the utility program FORMCOPY. For instructions on using FORMCOPY, see the Scientific XPL/4 Documentation Update.

2. Insert a SCRIPT or XPL/4 system diskette in the left-hand drive and the Winchester Installation diskette in the right-hand drive.

3. Type

OLD WBOOT

WBOOT is a copy of the Winchester Bootload program.

If you typed RUN now, you would bootload the Winchester.

4. To create a new bootload diskette, type

RENAME MONITOR

This command gives the new name MONITOR to the WBOOT program in memory.

5. Now replace the Winchester Installation diskette with your blank formatted diskette or timbre diskette #1, #3, or #4 in the right-hand drive.

6. Type

SAVE

You have now placed a copy of the Bootload program under the name MONITOR on the new diskette.

7. Place this diskette in the left-hand drive and press LOAD to load the operating system off the Winchester.

The same procedure can be followed to make a new Installation diskette. Only this time, you will recall a file name WINS off of the Winchester Bootload diskette; then rename it MONITOR, and save it on a blank formatted diskette.